

FRL90 SERIE



for Industrial, crane's and locking

- ➔ Heavy duty geared limit switch
- ➔ Up to 8 free programmable cams
- ➔ Different micro switches
- ➔ Cable outputs and connector available
- ➔ Protection class IP64
- ➔ Protection against contact

Product description

Heavy geared Limit switch in round housing, with synchroflange easy to install in any application. 100% protected against contact and shaft construction from shaft to cam. Different ratio and number of switches available. The cover is sealed with an Sealing ring and easy to dismount with only two screws.

Application

This geared limit switch find the application in cranes, locking constructions. With the round design easy to build direct in series with a motor.

Technical specifications

Usable Gear Ratio	1:1 – 2500:1	(more on request)
Program channels	1-8	(more on request)
Mechanical life time	> 20 Mill.	
Switching frequency	5 Hz	
Contact chatter time	<4 ms	
Actuating speed	>10 µm/s	
Contact break	0,6 mm	
Contact pressure	0,2 N	
Temperature range	-40 °C +85 °C	
Hysteresis	depend of ratio	
Repeatability	depend of ratio	
Weight	ca. 1,5 Kg	
MTBF (IEC 60050)	ON/OFF 10 Mio cycles	
	200'000 hours	
Rotation speed	max. 1500 RPM	
Shaft load	radial 450N, axial 200N	
Protection	IP 66 EN 60 529	
Shock resistance	2500m/s ² , 6ms IEC 68-2-27	
Vibrations resistance	200 m/s ² , 10...2000 Hz IEC 68-2-6	
Humidity	40% rh	

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Micro switches types

Ordercode	Picture	Description
0		KS25B4 changeover contact for cable shoe 2.8x0.55mm silver contact
		switching current 4A 250 VAC / 1A 60VDC
1		KS26B4 changeover contact for cable shoe 2.8x0.55mm gold contact
		switching current 4A 250 VAC / 1A 60VDC
2		S840 V20 changeover contact for cable shoe 6.3x0.9mm silver contact
		switching current 10A 250V AC / 6A 24V DC
3		S870 W changeover with screwed silver contact
		switching current 10A 250V AC / 6A 24V DC
4		S845 controlled opening switch gold contact
		switching current 10A 250V AC / 6A 24V DC
5		Simplex switch gold contact MIL-standard
		switching current 1 A 125 VAC / 0,5 A 28 VDC
6		Duplex switch gold contact MIL-standard
		switching current 1 A 125 VAC / 0,5 A 28 VDC

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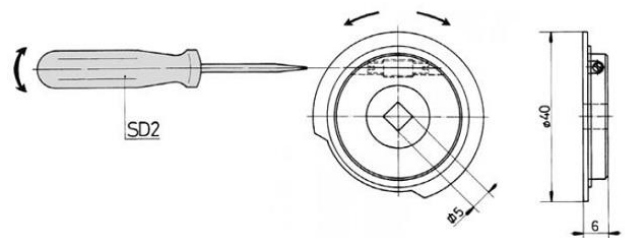
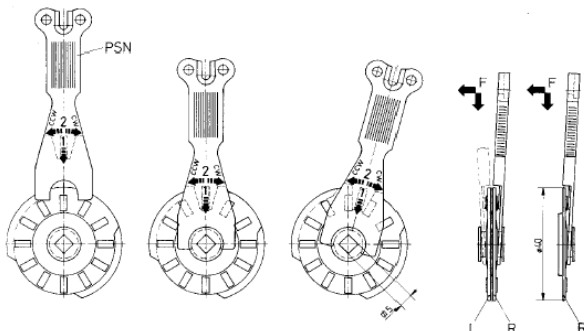
Cam types and adjustment

Type	Order code	Picture	Description
NK Cams	0		single cam
			adjustable with included PSN Key
			available with 20 ° / 60° / 90° / 180° opening angle
			Material: Grilon T300
NK Cams	1		double cam
			adjustable with included PSN Key
			free programmable from 6° - 180°
			Material: Grilon T300
NV Cams	2		single cam
			adjustable with included screwdriver
			available with 20 ° / 60° / 90° / 180° / opening angle
			Material: Grilon T300
	On request		double cam
			adjustable with included screwdriver
			free programmable from 6° - 180°
			Material: Grilon T300

Adjusting guideline of NV / NK cams

To adjust the NK Cam use the PSN key with levelling the cam and turn

To adjust the NV Cam use SD screwdriver and turn the small screw.

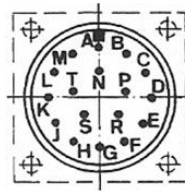


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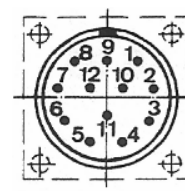


Wiring to Connector

Connector Male, view from face side



SFP12 (12Pin)



MS3102 A20-27P (14 Pin)

Color	Switch	Function	Pin Nr.	Pin Nr.
Black	1	COM (1) NC (2)	1	A
White		NO (3)	2	B
Black	2	COM (1) NC (2)	3	C
Brown		NO (3)	4	D
Black	3	COM (1) NC (2)	5	E
Green		NO (3)	6	F
Black	4	COM (1) NC (2)	7	G
Yellow		NO (3)	8	H
Black	5	COM (1) NC (2)	10	J
Grey		NO (3)	11	K
Black	6	COM (1) NC (2)	12	L
Pink		NO (3)		M
Black	7	COM (1) NC (2)		N
Blue		NO (3)		P
Black	8	COM (1) NC (2)		R
Red		NO (3)		S

Connection with connector
Cable designation at
Cable section for switch

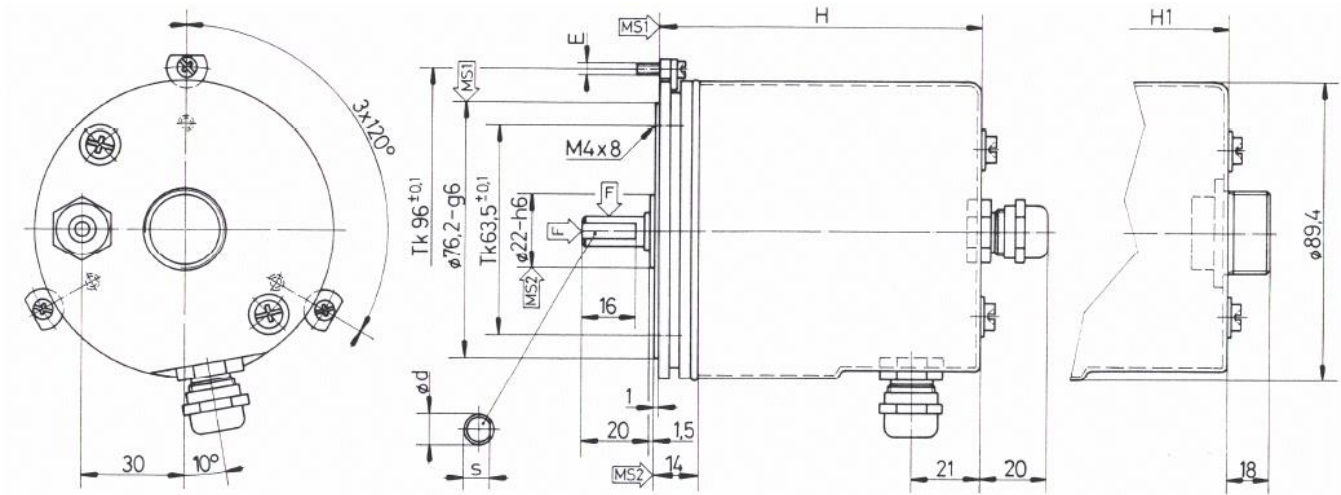
COM- NO (2.8x0.5mm)
DIN47100
0.334mm² / AWG22

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Dimension in mm

ø d = 9-h8 s = 8,5 E = M3 (4-40 UNC) F = $\approx 40\text{ N}$ 0-80 N MS = Montagefläche / Mounting surface H = Option



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Order Code

		936	X.	X	X.	X	X	X
RATIO								
0	1 : 1							
1	2 : 1							
2	4 : 1							
3	12,5 : 1							
4	25 : 1							
5	40 : 1							
6	100 : 1							
7	200 : 1							
8	750 : 1							
9	2500 : 1							
MALE RECEPTACLE - CABLE GLAND								
0	-							
1	SD12 (12 Pin) DIN							
2	SD16 (16 Pin) DIN							
3	MS3102 A18-1P (10 Pin) MIL							
4	MS3102 A20-27P (14 Pin) MIL							
5	MS3102 A20-29P (17 Pin) MIL							
6	Cable Gland PG 7 stick range Ø 3...6,5mm							
7	Cable Gland PG 9 stick range Ø 4...8mm							
8	Cable Gland PG 10 stick range Ø 5...10mm							
9	Cable Gland PG 13.5 stick range Ø 6...12mm							
NUMBER OF SWITCH								
0	3 switches							
1	5 switches							
2	6 switches							
3	8 switches							
TYPE OF SWITCH								
0	KS25B4 changeover contact for cable shoe 2.8x0.55mm silver contact							
1	KS26B4 changeover contact for cable shoe 2.8x0.55mm gold contact							
2	S840 V20 changeover contact for cable shoe 6.3x0.9mm silver contact							
3	S870 W changeover with screwed silver contact							
4	S845 controlled opening switch gold contact							
5	Simplex switch gold contact MIL-standard							
6	Duplex switch gold contact MIL-standard							
CAM								
0	single cam NK4101-180°							
1	double cam NK4201-180°							
2	single cam NV4101-180°							
3	double cam NV4201-180°							
CABLE OUTLET								
0	Axial							
1	Radial							



Questions ?

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